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marketing HAWAII'S beef cattle

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Marketing Economics Research Division
Agricultural Marketing Service
UNITED STATES DEPARTMENT OF AGRICULTURE

SUMMARY

Consumption of beef per person in the Hawaiian Islands has risen rapidly in the last decade. Production in the islands has increased slowly, but inshipments, mostly from the United States mainland, have doubled and recently made up nearly half of the total supply. The number of beef cattle in the islands reached a record high of 160,000 in 1958, but this represented only a gradual rise from 141,500 in 1948.

Cattle marketing in Hawaii still faces serious problems. Nearly all the cattle are raised on the island of Hawaii and the outlying islands, but most of the slaughtering is done at Honolulu, on the island of Oahu. Live cattle therefore are shipped, mostly by barge, from the islands to Honolulu. Many of these cattle, raised on open mountainside ranges and therefore semiwild, are sent to slaughter with little or no fattening. Bruising and other injuries to cattle on the way to market have caused severe losses, reducing the quality of carcasses and the returns to growers through price discounts because of the damage.

It appears possible that the problem of bruising and injuries would be alleviated by establishment of slaughterhouses and meat coolers on the islands where cattle are grown. Carcasses then would be cooled and shipped under refrigeration to Honolulu. It would not be difficult to install coolers on the barges. Meat thus could be shipped without the injuries and losses incident to herding the cattle to barges or ships, loading them, unloading them, and driving and hauling them to slaughter in Honolulu. Cooling and shipping of carcasses already is practiced on the island of Maui, and the chilled beef is shipped by airplane from that island to Honolulu.

A change to slaughter in the producing islands, however, doubtless would involve new problems that would have to be weighed against the present difficulties.

Washington, D. C. March 1960

MARKETING HAWAII'S BEEF CATTLE

by
Wendell Calhoun 1/

The first cattle in the Hawaiian Islands were shipped from California in 1793 and apparently were of the Spanish longhorn type. In 1820, King Kamehameha issued a taboo against the killing of cattle for 10 years, that their numbers might be increased. They grazed at will in the valleys and up the mountain slopes with no fences to retain them. Eventually many reverted to a wild state. The first horses--Spanish mestanos or "mustangs"--had been brought in during 1803. In 1832 four vaqueros came from California to show the Hawaiians how to handle cattle by using horses. They were known as Espegnols, whence came the name of "paniola" for the Hawaiian cowboy. A considerable business in hides and tallow grew up around the hunting of wild cattle, with commercial shipments of these commodities on ships which stopped in the islands. A tallow rendering plant operated at Kawaihae, and later was moved to Waimea. The first recorded shipment of beef, of 158 barrels, was exported in 1849. Most of the surplus beef produced was sold to the merchant and whaling ships which stopped at Honolulu or were brought to the islands for refitting.

Early importations of cattle were of many breeds--Aberdeen Angus, Devon, Dexter, Hereford, and Shorthorn, together with most of the dairy breeds. The Herefords became the most popular, and comprise most of the present island herds. The increase in total numbers of cattle from 1846 to 1958 is shown in table 1.

Hawaii's 160,000 beef cattle graze the year around on the slopes of its great volcanic mountains. Principal of these are Mauna Loa and Mauna Kea, each rising nearly 14,000 feet above the sea on the "Big Island" of Hawaii, and the 10,000-foot Haleakala on Maui. In addition are the much older and more sharply eroded mountain masses of West Maui, Oahu, and Kauai. At the beginning of 1958, about 132,000 beef cattle were on the ranches and ranges of Hawaii and Maui, and the remaining animals on the other islands.

Rainfall and grazing conditions often differ widely over short distances on these mountain slopes. The prevailing trade winds from the northeast are the dominant weather factor. Blowing over great stretches of ocean, they absorb much moisture. When they cross the sharply rising land masses of the islands and are forced into higher and cooler air strata, frequent and often heavy rains result on the windward slopes. But as the air currents pass over the sharp, high ridges and drop down the leeward slopes into warmer air, the rains decrease or cease abruptly. In such places, a complete transition from tree ferns and other jungle growth to veritable desert occurs within a short distance.

1/ Agricultural economist, Agricultural Marketing Service, U. S. Department of Agriculture. This study was made in cooperation with the Department of Agricultural Economics, Hawaii Agricultural Experiment Station, University of Hawaii.

Table 1.--Numbers of cattle in Hawaii, by islands, during specified years between 1846 and 1958 1/

Year	Total	Hawaii Island	Maui and Molokai	Oahu	Kauai and Niihau
	Number	Number	Number	Number	Number
1846	2/35,000	3/	3/	3/	3/
1851	40,500	20,000	3,500	12,000	5,000
1879	97,200	3/	3/	15,300	3/
1884	117,600	3/	3/	19,600	3/
1895	125,400	3/	3/	27,600	3/
1900	102,900	3/	3/	3/	3/
1905	132,700	3/	3/	21,700	3/
1910	145,000	81,900	32,800	20,200	10,100
1920	137,100	74,700	37,900	15,400	9,100
1930	138,400	84,800	29,800	13,100	10,700
1940	139,100	82,900	30,000	12,500	13,700
1948 1/	141,500	91,600	32,800	3,000	14,100
1953	155,300	100,400	34,000	6,800	14,100
1955	158,900	107,000	30,900	8,500	12,500
1958	162,100	101,400	37,600	9,300	13,800

1/ Beef and dairy cattle to 1948; beef cattle only from 1948, herds of 20 or more head.

2/ 10,000 tame and 25,000 wild.

3/ Not available by islands.

Source: "Thrum's Annual," University of Hawaii Agricultural Library; 1948 data, "1948 Statistics of Diversified Agriculture in Hawaii," and 1953-58 data, "Statistics of Hawaiian Agriculture" (annual), Agricultural Extension Service, University of Hawaii.

Where rainfall is favorable, good grazing may be available. The heavy rainfall areas have had dense tropical growth of trees, shrubs, and ferns, but provided little grazing in their natural condition. Where such lands have been cleared, fertilized, and seeded with palatable grasses and shrubs, they yield abundantly. Hawaiian pastures have been improved through the introduction of desirable forage species from many countries. The widely prevalent koa haole shrub is of major importance as a browse. Inedible shrubs, such as lantana and the prickly pear, have become serious pest-plants in some areas.

THE MARKET

All beef produced locally is marketed in the islands. Figure 1 indicates sources of supply by islands of cattle slaughtered each year from 1946 through

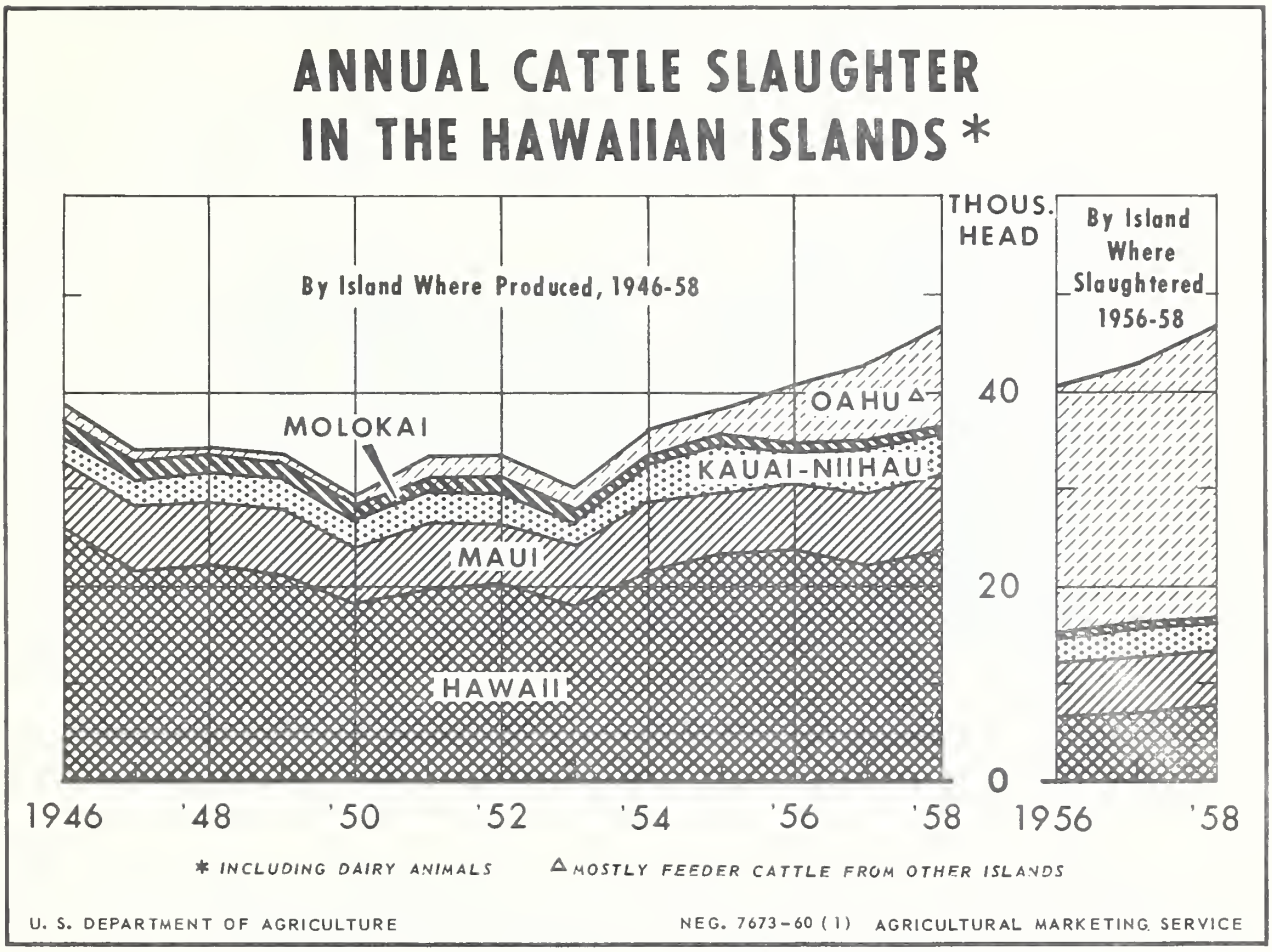

Figure 1

1958. The greater part were produced on Hawaii Island. But most of the cattle from the "outer islands" were transported to Oahu Island and slaughtered there.

During recent years, beef produced in the islands has supplied little more than half the needs of the civilian population, plus very small quantities to the military forces. The remainder has been shipped in, mostly from the U. S. mainland. The sources of the civilian supply of beef and veal, the percentage that Hawaii slaughter has been of the total supply each year, and the annual rate of civilian per capita use are shown in table 2 for the 11-year period 1948-58. The volume of slaughter of island cattle has increased moderately during this 11-year period, but meanwhile receipts of mainland beef have tripled. The rise in total consumption, of course, has been due in considerable part to the increase in people in the islands. But much of it represents a rapid rise in the annual per capita consumption of beef.

Table 2.--Total annual civilian supply of beef and veal in Hawaii and per capita use, dressed weight, 1948-1958

Year	Beef cattle on ranches	Hawaii cattle slaughter	Inshipments of dressed beef 1/	Total supply	Percent Hawaii slaughter of total supply	Civilian population of Hawaii 2/	Per capita use of beef in Hawaii
	Number	1,000 pounds	1,000 pounds	1,000 pounds	Percent	Number	Pounds
1948	141,500	18,508	5,023	23,531	79	491,146	48
1949	141,200	17,536	7,791	25,327	69	481,537	53
1950	142,200	15,558	7,709	23,267	67	471,447	49
1951	146,900	17,931	5,204	23,135	78	472,602	49
1952	147,300	18,299	7,498	25,797	71	465,325	55
1953	155,300	14,885	13,446	28,331	53	473,214	60
1954	152,300	17,851	15,098	32,949	54	481,386	68
1955	158,900	20,445	15,444	35,889	57	500,976	72
1956	156,800	21,426	17,600	39,026	55	523,359	75
1957	160,500	22,788	17,962	40,750	56	551,537	74
1958	162,100	23,970	16,500	40,470	59	575,771	70

1/ Mostly mainland, some from New Zealand, Australia, and Canada.
2/ As of July 1 of each year.

Source: "Statistics of Hawaiian Agriculture," Agricultural Extension Service, University of Hawaii, and reports by Department of Health, State of Hawaii.

Figure 2 indicates the ups and downs in the rate of Hawaii cattle slaughter from 1948 through 1954, followed by moderate increases during the next 4 years. In contrast, figure 3 shows the relatively small volume of inshipments for the civilian market through 1952, the sizable jump in 1953 to take up the slack in island marketings because of drought and a steadily continuing rise thereafter.

The civilian supply of beef and veal in Hawaii in 1957 was 77 percent greater than in 1951, although the numbers of the civilian population increased by only 15 percent during those 6 years.

As indicated in figure 4, the increase in average annual consumption of beef per person in Hawaii was from 49 to 75 pounds between 1951 and 1956. This was a jump of 53 percent in 5 years.

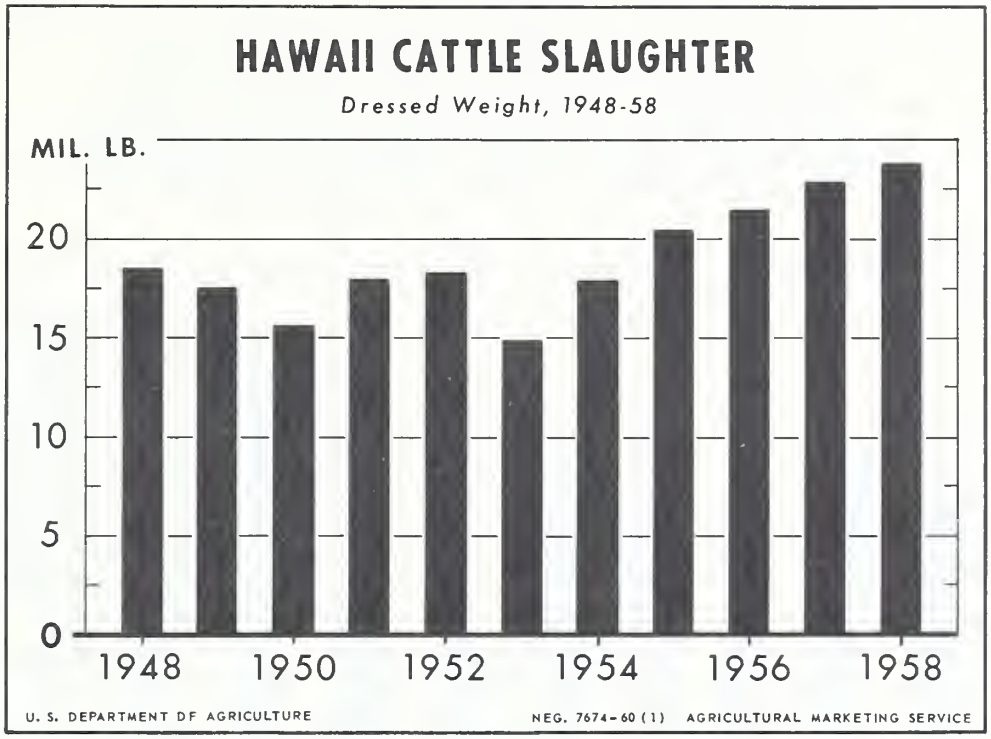

Figure 2

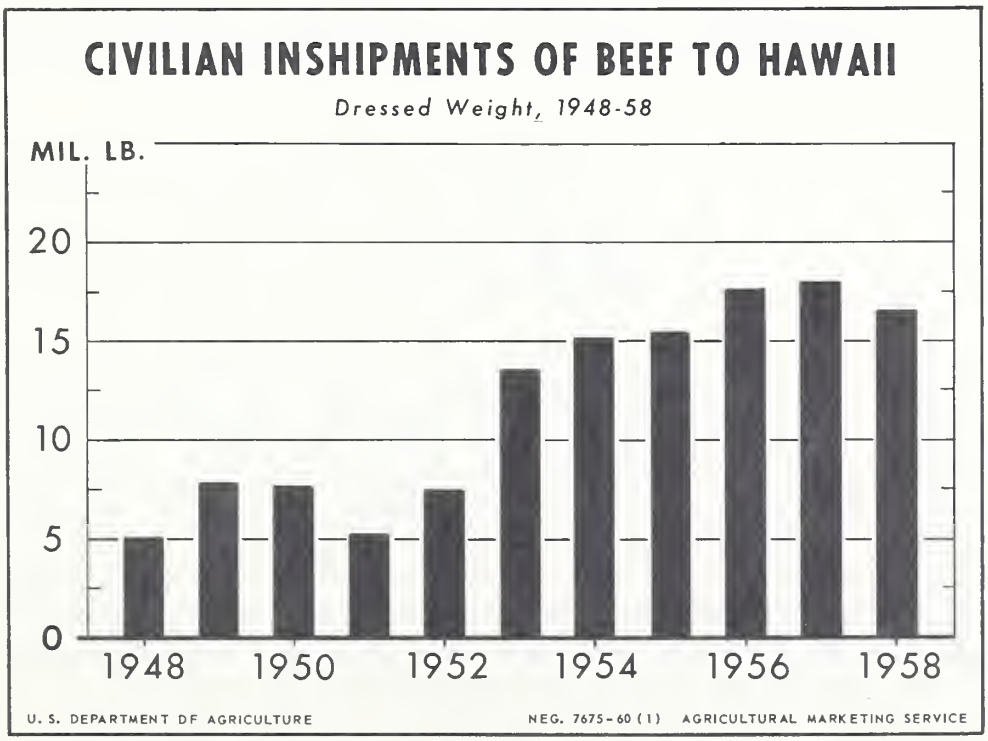

Figure 3

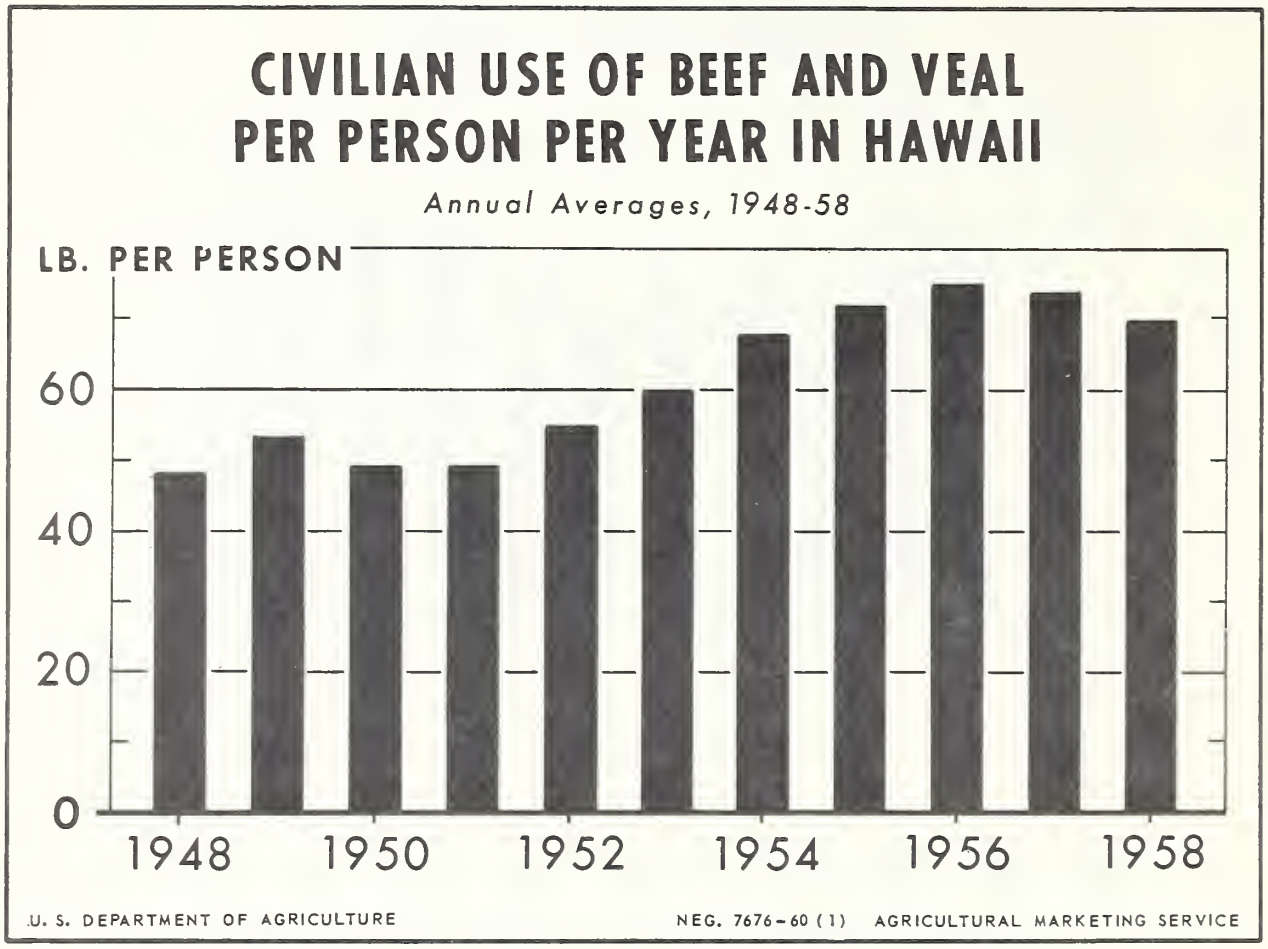

Figure 4

MOVEMENT TO MARKET

Beef for use by the people of each of the outer islands is slaughtered locally. Most of the remainder of the cattle have been transported alive by barge and tugboat across the open seas to the port of Honolulu on Oahu. On arrival there, they are moved by railroad cars or motortrucks from the pier to local slaughter plants. One flat barge has been fitted with several pens for the overwater haul, and fenced with heavy posts and timbers. Capacity of the barge is about 240 to 290 head of cattle, according to size. It was operated at the time of this study at charter rates per round trip from Honolulu to ports on Hawaii or Maui, regardless of the number of cattle loaded. The charges per trip and the approximate ranges of time from the loading points to Honolulu harbor were:

From:	Hilo, Hawaii	$2,750	18-24 hours
	Kailua-Kona, Hawaii	$2,500	15-20 hours
	Kawaihae, Hawaii	$2,500	15-20 hours
	Kahului, Maui	$1,500	9-12 hours

The transit time may vary widely, according to the wind and waves encountered and also the size and power of the different tugboats in service.

The barge was not operated to Kauai. Cattle from there were loaded in temporary pens set up on the regular barges to Honolulu. Up to 50 head per trip were so loaded. Shipments were made from Nawiliwili and Port Allen.

In earlier days, cattle were transported from the outer islands on the steamship "Humuula," which had arrived in Hawaii in 1921. It carried some 200 cattle per trip, in pens on the deck. Loading piers had not been developed when it arrived, and the cattle were driven over shore-side ledges into deep water. The paniolas then swam their horses or maneuvered small boats alongside the swimming cattle and placed slings around their bellies, by which they were hoisted aboard ship with crane and windlass.

BRUISING LOSSES

Losses to producers sometimes are heavy from bruising, which shows up on the carcasses after the cattle are slaughtered in Honolulu. Such injuries may occur anywhere along the way, beginning with the roundups to get the cattle out of rough terrain and heavily wooded areas on the mountainsides. From parts of the ranges they can be trailed directly to the barge, but mostly they are trucked from range or pasture to the island ports. Such hauls may be rough, occasionally over tracks resembling stairsteps from rock to rock down the mountainsides.

Loaded on the barge, the cattle begin their voyage across open seas. If the weather is fair, the voyage may be smooth. But during storm and strong wind, the barge is pitched and tossed about. Then, in the words of a tugboat captain, "Those cattle take an awful beating." Ample evidence of this shows in their appearance at the time of unloading after a stormy voyage. Many come off lame, or show by their appearance that they have been down on the floor of the barge.

Deductions for bruises are made in the account sales, at varying numbers of cents per pound of dressed weight, according to the severity or extent of injury. Mostly these deductions range between $6 and $12 per injured animal, but bruising losses in excess of $20 per head are not uncommon. (In recent years, beef cattle of typical weight have sold at about $200 per head.) The rate of loss often varies widely between different shipments. Some sales accounts list bruises on as many as three-fourths of the animals in a shipment. The general belief of the cattlemen is that a close relationship exists between the severity of the wind and waves encountered by the barge on the open seas, and the extent and degree of bruising of cattle then in transit.

Then immediately the cattle face another hurdle--loading into railroad stock cars or motortrucks for the short haul from the Honolulu pier to the slaughter plant. For tame cattle accustomed to being handled, this may be a simple and easy operation. But semiwild cattle off the range are often terrified and "spooky." When a pen gate is opened and men on the fences begin shouting at them, the cattle huddle together, heads down--watching. When one is finally prodded into movement, the entire lot makes a break, either to another corner of the pen or out the gate to the loading platform and railroad car, with much crowding against gateposts and doorways. Some loads move in without much difficulty. Usually, however, some stragglers have to be forced. And always the critical point is the narrow edge of the doorway, where animals are constantly being caught and subjected to tremendous pressure by the crowding of the others.

GRADE OR QUALITY OF ISLAND BEEF

Before 1959, most of the beef cattle of the islands were moved directly from the ranges or pastures to the slaughter plants. Quality, finish, and age of the animals varied widely. Some semifinishing was done on the more nutritious and palatable grasses and browse, supplemented by "free-choice" molasses in open tanks. In a few instances, other concentrates also were used. But practically no feedlot fattening had been done.

Federal meat grading for locally produced beef in Hawaii became available November 1, 1959, for those who wish to pay for the service. Prior to that, locally produced beef had been federally graded only on a brief "demonstration" basis in October 1957. During this demonstration period, an official grader of the U. S. Department of Agriculture classed 844 carcasses of Hawaii beef in Honolulu, by the Standard United States Grades for Carcass Beef. In this limited sample, it was found that about 5 percent of the carcasses examined would grade U. S. Choice and 25 percent U. S. Good.

In contrast, an analysis by grade of the mainland beef shipped to Hawaii during a 12-month period in 1956-57 indicated that about three-fourths was U. S. Choice. 2/ The Hawaii supply of beef from all sources during that period was nearly 40 million pounds, of which mainland U. S. Choice comprised nearly one-third.

Despite the dramatic increase in receipts of U. S. Choice beef from the mainland in the late 1950's, there is ample evidence that many local residents continue to prefer ungraded island beef. On the basis of a 1952 study, the Hawaii Agricultural Experiment Station reported the reason for this preference

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2/ Calhoun, Wendell. "Grades and Cuts of Mainland Beef Shipped to Hawaii for Civilian Use," Agricultural Economics Report 34, Hawaii Agr. Expt. Sta., and Agr. Mktg. Serv., U. S. Dept. Agr., July 1958.

as a belief that locally produced beef is fresher or tastier than the mainland product. 3/ The practical value of this preference to Hawaii ranchers might deteriorate, however, if changes occurred in the attitudes of consumers toward grades and grading.

COMPETITION BETWEEN ISLAND AND MAINLAND BEEF IN HAWAII

Detailed records of the quantities of mainland beef shipped to Hawaii for the civilian market are available only since 1948. During that year, slaughter of Hawaii cattle totaled 18½ million pounds, dressed weight, and civilian inshipments of mainland beef 4½ million pounds. Similar proportions of supply continued through 1952, when a drought in the islands caused some liquidation of local herds. During the next year (1953), island marketings dropped, and the supply from the mainland jumped from around 7 million to 13 million pounds. In the 5 years 1953-57, the island civilian population increased 18 percent, from 465,000 to 551,000 persons. During the same time, the rate of use of beef went up 34 percent, from 55 to 74 pounds per person. The net result was that, during these 5 years following 1952, the total civilian use of beef in Hawaii jumped 60 percent, from 26 to 41 million pounds per year.

This jump had greater significance than a mere increase in meat supplies. Practically all island cattle had been shipped directly from the ranges to the slaughter plants without supplemental feeding and fattening. In contrast, an analysis of the cargo manifests of ships bringing mainland beef to Hawaii during a 12-month period in 1956-57 indicated that three-fourths of such meat was of U. S. Choice grade. The remainder was mostly ground beef and boneless cuts.

Of the total supply of beef consumed in Hawaii during that 12-month period, receipts of U. S. Choice grade from the mainland comprised about 30 percent.

In summary, the civilian supplies of beef in Hawaii from 1948 through 1957 totaled as follows:

	Hawaii slaughter	Inshipments	Total supply
	Pounds	Pounds	Pounds
1948-52	88,000,000	33,000,000	121,000,000
1953-57	97,000,000	80,000,000	177,000,000
1948-57	185,000,000	113,000,000	298,000,000

WHERE SHOULD THE ISLAND CATTLE BE SLAUGHTERED?

Island producers have long been dissatisfied with the frequency and extent of their losses from bruising of live cattle shipped to Honolulu for slaughter. An alternative might be slaughter at various points in the islands, chilling of the carcasses, and shipment under refrigeration to the central market. Such operations doubtless would involve new problems, which would have to be weighed against the hazards and losses of the present overseas shipment of live cattle.

3/ Peters, C. W., Reed, Robert H., Doue, Stephen M., and Clark, Richard H. "Meat Purchases and Preferences in Hawaii." Agricultural Economics Bulletin 8, Univ. of Hawaii, June 1954.

A fully integrated enterprise of this type is well established on Maui. Cattle on pasture are fed supplemental concentrates for several weeks. They are then slaughtered at the ranch at regular intervals, and the carcasses are hung under refrigeration for nearly 2 weeks. Barge service is not locally available, so the meat is shipped by plane to Honolulu, where it goes directly into the coolers of two large retail markets. Most of this meat probably would grade U. S. Good.

Not all individual producers in the islands could follow similar practices. But by joint action among groups of producers, operations could be established whereby chilled carcasses, rather than live cattle, could be shipped to Honolulu. Only small refrigerated boxes are currently available on the barges, but carcass cooler space could readily be provided. The industry would then benefit in two ways:

(1) Losses from bruising would be eliminated, other than such injuries as might occur in getting the cattle from the range or pasture to the local slaughterhouse, and

(2) The eating quality of the meat would improve while it was under refrigeration at the slaughter plant and in the cold boxes on the barge en route to the consumers.

Other factors operate in favor of concentrating slaughter operations on Oahu. Slaughter of most cattle in one location produces certain benefits from large-scale operation. Disposition of byproducts is facilitated, and provision of refrigerated storage space is less costly. Proximity to the major centers of population also is an argument for continuing present slaughter practices.

AN INDUSTRY IN TRANSITION?

Currently the marketing of Hawaii's cattle may be entering a major transition, by the addition of feeding operations to production on the ranges. Large-scale fattening operations were started near Honolulu late in 1958. A major nutrient in the ration is "final molasses," the end product in the refining of cane sugar. This is mixed with bagasse as a "carrier," and green chopped alfalfa is fed as available. Grain in varying quantities also is used in the ration. As sugar cane is Hawaii's main crop, large quantities of molasses and bagasse will be available on each of the islands if beef fattening proves successful and economically feasible. Hawaii's cattle industry may then quickly bridge the gap from an extensive range industry to an integrated program of range-bred and sugar-fattened beef.

Another recent development that may have a distinct influence on the marketing of island beef is enlargement of the meat processing facilities in Hilo, through construction of a new plant by the local marketing cooperative. Operators of this facility plan to fabricate fresh beef produced and slaughtered on the Island of Hawaii, and to manufacture an increasing volume of sausage products for sale throughout the islands. This expansion of facilities at Hilo is another step in the direction of processing beef in the area of production.